

**II. REQUEST TO WITHDRAW, REISSUE AND RE-SET THE  
RESPONSE DATE FOR THE APRIL 18, 2007 OFFICE ACTION  
FOR THE REASON THAT APPLICANTS ARGUMENTS RE  
CLAIM 6 WERE NOT CONSIDERED AND NO NEW GROUND OF  
REJECTION WAS MADE IN REGARD TO THAT CLAIM**

At page 5 of the Office Action it is stated that Applicant's arguments are moot in view of the new ground(s) of rejection. However, no new ground of rejection was made to claim 6. The rejection made in the April 18, 2007 Office Action is identical to the rejection made in the Office Action dated September 7, 2006. Applicants' amendments made to claim 6 and arguments made in regard to why the amended claim 6 overcame the prior rejection were ignored. Thus, Applicants have been denied due process of law in regard to at least claim 6. For this reason it is requested that the April 18, 2007, Office Action be withdrawn, reissued as a NON-FINAL Office Action with a substantive response to the amendments and arguments made in regard to claim 6 and with a new date for response to the reissued Office Action.

It appears that the only new ground(s) of rejection in the April 18, 2007 Office Action were the 35 USC § 112 rejection made to claim 14 and the 35 USC §103(a) rejection made to claims 7-11 & 14.

It is believed that, in light of the arguments presented previously and as also revised and presented below, amended claim 6 is clearly allowable. Alternatively, in light of the Office Action admittedly not having considered the merits of Applicant's arguments, Applicants request that prior Office Action, including the rejection to claim 6 be withdrawn and that a new, NON-FINAL Office Action be issued and that the date for response be reset.

**III. REMARKS REGARDING AMENDMENTS AND NEW CLAIMS**

By the present amendment Applicants have added new claims 15-18, all of which are directed to methods of disassembling laser printer toner cartridges through use of a laser beam, a gimbal and a computer-implemented system that precisely cuts the toner cartridge into sections along the joining surfaces of the cartridge and avoids impinging on electrical conductors that are embedded within the cartridge near the joining sections. The new claims are substantially narrower in scope than the claims rejected in the Office Action dated April 18, 2007, and all of the new claims find clear support in the specification. No new matter is presented. By these newly presented claims Applicants make no admission of un-patentability in regard to the rejected claims. Rather, as explained in detail below it is believed that the rejections are not well founded in law, fact or logic and should be withdrawn.

Also, claims 7, 11 and 14 have been amended to provide antecedent basis for and to clarify certain claim terms. No new matter is added by these amendments.

In responding to the rejections made under 35 U.S.C. § 103, and to show the non-obviousness of these and the newly presented claims, Applicants rely not only on the arguments presented, but also on the statements made in the Declaration of Joy James, MBA, ("James Decl."), and the Declaration of Sagie Shanun, ("Shanun Decl.") submitted concurrently herewith under 37 C.F.R. § 1.132.

For the reasons set forth below it is believed that all of the presently presented claims are clearly allowable.

**IV. REPLY TO REJECTION OF CLAIM 14 MADE UNDER 35 USC  
§112**

Claim 14 has been rejected under 35 USC § 112 as lacking antecedent basis. In reply claim 14 has been amended to provide antecedent basis. Claim 11 has also been amended for the same reason.

**V. REMARKS REGARDING NON-OBVIOUSNESS OF PRESENTLY  
CLAIMED SUBJECT MATTER**

For convenience and to summarize Applicants' showings on the issue of patentability under 35 U.S.C. § 103 raised in the Office Action of April 18, 2007, the subject matter of all of the presently pending claims would not have been obvious at the time of the invention for one or more of the reasons summarized below.

All of the pending claims require use of a computer implemented laser cutting system that cuts through a laser printer cartridge along line segments of the surfaces that join sections of the cartridge together. The line segments trace a serpentine path that extends in three dimensions, and the cartridges to which the cutting process is applied have electrical conductors embedded near the joining surfaces, and have line segments that vary in thickness. The laser cutting process requires a set up procedure that provides instructions to the system for precise cutting along the serpentine path of the cartridge at speeds and beam intensities that will cut through the variable thickness line segments and without impinging on the embedded electrical conductors.

The state of the prior art in regard to cutting cartridges for remanufacture of such cartridges is limited to cutting with saws or blades that cut in a single plane and leave a rough, unattractive cut. Additionally, the state of the art in regard to splitting of such cartridges for a broader purpose, such as extracting certain components for reuse and grinding the cartridge so that the ground up resin material can be used to make new cartridges, is limited to cutting in a plane, rather than in a serpentine path, and no effort is made to control the speed or intensity of the laser beam to avoid impinging on embedded electrical conductors. See, e.g., James Decl., at ¶¶ 1-3, 7-9; Shanun Decl., at ¶¶ 1-5, 18-29

The lasers that are used in the presently claimed processes were previously used in non-analogous fields to cut different products: the subject matter of the present claims represents the first time that such lasers were used in the remanufacturing industry, and

this application certainly is the product of great, inventive and non-obvious insight by the Applicants. See, Shanun Decl., at ¶¶ 11-17.

Finally, the level of skill possessed by a person of ordinary skill in the laser printer toner cartridge and inkjet printer cartridge repair and remanufacturing industry is relatively low, including some training and experience in tool making or the equivalent, some computer operation skills and some training or experience in basic theory and operation of electromechanical devices. See, Shanun Decl., at ¶ 9. When measured against this level of skill, it certainly follows that the presently claimed inventions are major, unexpected and non-obvious advances.

Detailed showings of non-obviousness are provided below in regard to all of the pending claims.

## **VI. REPLY TO REJECTION OF CLAIM 6 MADE UNDER 35 USC §103(a)**

Claim 6 has been rejected under 35 USC §103(a) as being unpatentable over US Patent No. 6,223,010 to Araki (hereinafter referred to as “the ‘010 patent” or “Araki”) in view of US Patent No. 6,609,044 to Basista et al (hereinafter referred to as “the ‘044 patent” or “Basista”) and US Patent No. 4,549,066 to Piccioli et al (hereinafter referred to as “the ‘066 patent” or “Piccioli”). In reply Applicants will show that the claimed invention is not prima facie obvious from the cited references, and that, to the contrary, these references teach away from the invention as presently claimed.

### **A. Araki Teaches Away From the Claimed Invention**

Araki does not remanufacture the cartridge itself. Rather, he melts it down to resin and then uses the resin material to manufacture entirely new products! See, Shanun Decl. at ¶¶ 1-10, 23-24. Also, Araki does not disassemble the toner cartridge along interfacing thermoplastic jointing surfaces as claimed. See, Shanun Decl., at ¶¶ 23-24. Thus, Araki provides a strong teaching away from the claimed invention.

After the Araki process is completed no toner cartridge section remains, much less any toner cartridge section that is suitable for re-welding and re-use. After the presently claimed process is completed, the toner cartridge sections remain with the cutting done along the joining surfaces of the original cartridge, and thus in a condition in which they can be re-joined together to meet OEM specifications.

As expressly stated in Araki, in all embodiments of his process the cartridge components themselves are “melted and recycled as a resin material”. See, Araki at 9:17-25<sup>1</sup>. Araki describes several embodiments, with each embodiment differing in the identity of the particular recyclable part(s) that are “easily taken out [of the disassembled cartridge] without being damaged” and differing in the specific technique for cutting the cartridge with a laser so that each such part can easily be removed. In Araki the ground-up cartridge material is used to make entirely new products, and likely for this reason there is no requirement in Araki regarding details of the cut, such as precision, specific depth and so forth, except that Araki avoids cutting the specific components that are to be recycled, *per se*. The nature of the cuts made in the Araki process renders re-assembly of the cartridges to be impossible. See, Shanun Decl., at ¶¶ 23-24. Thus, in Araki the focus is on reusing certain components contained in the cartridge; not on reusing the cartridge itself, and this focus is directly contrary to the presently claimed invention.

In Araki, the general approach to cutting the cartridge with a laser beam is to dispose between the laser beam and each pre-designated part that is, *per se*, to be recycled a “material layer difficult to cut by the laser”. See, Araki Abstract, second sentence. The specific, easily removable and recycled parts are identified in the paragraph spanning columns 1-2 of Araki. In no Araki embodiment is the toner frame or hopper frame, *per se*, remanufactured. Rather, these frames are melted and recycled as a

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<sup>1</sup> While the present application refers to the two constituent parts, or components of a toner cartridge as the “toner section” and the “hopper section”, Araki refers to these parts as the toner frame 12a and the cleaning frame 12b. See, Araki at 9:21-25. Also, Araki refers to a toner cartridge as a “process cartridge”.

resin material. Thus, in the Araki process there is no incentive and no reason for precise cutting the cartridge along the joining surfaces of the original cartridge. However, such precise cutting is a major objective and is an important feature of the presently claimed process.

With respect to presently amended independent claim 6, Araki has no disclosure and no teaching of at least the following claim elements and limitations:

- Determining the thickness of each interface line segment;
- Removably retaining the toner cartridge in a gimbal having three axes of rotation;
- Providing a moveably adjustable light path;
- Controlling the laser, the gimbal and the light path by a computer program; and,
- Causing the laser beam to trace a path along each line segment at a speed determined by correlating the thickness of each interface line segment with the laser beam power.

**B. Basista Is Not Relevant to the Field of the Present Invention and Teaches Away From the Claimed Invention**

The secondary reference cited and relied on in the Office Action, Basista '044 is not even relevant to the field of the present invention and teaches away from the presently claimed invention. Basista is not intended to cut cartridges. It is purely for two-dimensional cutting of material, and is primarily related to the methodology and software for cutting shapes out of a sheet to optimize the speed of cutting sheets. See, Shanun Decl., at ¶ 25. Not only does Basista not have any disclosure of the above bullet-pointed claim elements, it is directed and limited to cutting a single sheet of material. See, Basista Abstract, lines 1-3; and [1:10-15; 3: 5-10]. Thus, Basista is not even relevant to laser cutting of thermoplastic material.

Basista is not relevant to cutting a plurality of interface line segments and is not relevant to any part of the toner cartridge repair or remanufacturing industry. There is no disclosure of determining the speed of a laser beam by correlating the thickness of each interface line segment of a thermoplastic material with the laser beam power. Thus, no matter how broadly claim 6 is interpreted, there is no reasonable basis to conclude that using Basista's computer cutting program for a sheet of metal could be a credible teaching, much less a reasonable teaching for modifying the Araki system and methods to yield the presently claimed inventions.

**C. Piccioli Teaches Away From the Claimed Invention**

The third reference cited and relied on in the Office Action, Piccioli '066, also teaches away from the claimed invention. Piccioli is limited to the original production of a blow-molded polyester container, and the removal of excess product; not to repairing or re-manufacturing a product by cutting through a thermoplastic product. See, Shanun Decl., at ¶ 26. In the presently claimed process no excess product is cut and no excess product is produced by cutting the cartridge product. Thus, Piccioli is not relevant to the field of toner cartridge repair and remanufacture. Also, Piccioli has no disclosure of cutting into sections any container having interfacing thermoplastic joining surfaces. The Piccioli containers don't even have interface joining sections. Finally, Piccioli has no computer control, much less computer control of speed of travel of a laser beam by a method of correlating thickness of each interface line segment as required by claim 6. Thus, none of Piccioli's teachings is relevant to the issue of obviousness presently under consideration.

**D. The Alleged Reason for Combining the Alleged Teaching of the Cited References Do Not Make Practical Sense and Are Contrary to the Reasonable Implications Flowing From Those References**

The Office Action alleges that using the computer and cutting program of Basista in the Araki system would have been obvious to ensure cutting accuracy and decrease

processing time, and that it would have been obvious to use a rotation device as taught by Piccioli in the Araki system because of enhanced product handling during the disassembly process.

In reply Applicants would point out even if the Basista computer and cutting program were used in the Araki system, and even if cutting accuracy were improved and processing time in the Araki system were reduced, it still would not have yielded the claimed process. For example, Basista is concerned with optimizing the amount of time to perform required cuts in a piece of sheet metal in order to cut out a series of individual parts or shapes from the sheet in the most efficient way. In the present invention the starting material is not a sheet but rather is a finished, 3-dimensional product that presents only a single serpentine path for cutting. The concept of optimizing a path of cutting simply does not exist in regard to the present invention. Also, assuming, *arguendo*, that the Basista cutting program suggested, as a matter of cutting efficiency, to cut a cartridge along a path that was not along the joining surfaces, that would be directly contrary to the stated purpose and express language of claim 6. It simply would make no sense to efficiently cut a path through the cartridge and end up with cartridge sections that could not then be used for the intended purpose of re-joining them along the original joining surfaces in order to repair or remanufacture a toner cartridge that meets OEM specifications.

Similarly, assuming *arguendo* that a rotation device as taught by Piccioli was used in the Araki system, it is not true that "enhanced ease of product handling" would result. Furthermore, such use would not yield the claimed process. Simply put the Piccioli rotation device is not a gimbal, does not operate like a gimbal and would be of no use in the Araki system to yield toner cartridge sections that could thereafter be re-joined to make cartridges meeting OEM specifications. As expressly required by claim 6 the computer processor causes the laser beam to trace a path along each line segment by movably adjusting the light path and the gimbal. In other words, both the light path and



the cartridge move. In Piccioli, only the product to be cut moves. The light path of the laser beam is focused and concentrated on a predetermined portion of the article and the article is rotated. Thus, such a cutting system and process, even if adapted to be included in the Araki toner cartridge process, is directly contrary to the invention of claim 6 for several reasons, namely in the claimed process both laser and the gimbal move at some point during the cutting process, and there is no fixed predetermined portion on the article to which the laser beam is focused. Rather, in the claimed invention the article has a plurality of portions, i.e., the plurality of interface line segments.

In addition to all of the above, and as explained in the Shanun Decl., at ¶¶ 27-28, it is the process described in United States Patent 6,754,460 ("the '460 patent") to Lewis et al, that provides a good benchmark for the type and sophistication of the equipment used in the remanufacturing industry for disassembling toner cartridges. As shown in Lewis '460 and further explained in the Shanun Decl., Lewis is limited to use of a contact cutting tool that creates a much wider gap, uses up more cartridge material and results in a cut that is less attractive than the cut created by the presently claimed laser cutting process. Further more, the Lewis process is slower, has dust, debris and injury risks that are not found with the presently claimed laser cutting process.

For all of the above reasons the teachings of the individual cited references do not combine to render the claimed process obvious, and the rejection to claim 6 should be withdrawn.

## **VI. REPLY TO REJECTION OF CLAIMS 7-11 AND 14 MADE UNDER 35 USC §103(a)**

Claims 7 and 9-11 have been rejected under 35 USC §103(a) as being unpatentable over US Patent 5,676,794 (hereinafter referred to as "the '794 patent" or "Baley") in view of Araki '010.

### **A. Assertions of Obviousness Made in the Office Action**

With respect to independent claim 7, Baley has been cited as disclosing cutting a toner cartridge to a depth of about 3/16 of an inch and Araki has been cited as disclosing a method for cutting a toner cartridge with a laser. The Office Action alleges that it would have been obvious to use a laser as taught by Araki, presumably in the Baley system. The Office Action also alleges that the product of claim 7 is substantially similar to the Baley product, that it differs only in the manner by which it has been made, and that in the absence of a showing that the claimed product is materially different from the Baley product, there is nothing in the record to show that the claimed product differs in kind from those obtained by the references.

In reply Applicants will show that the claimed product is materially different from the Baley product, and will do so by statements made in the prior art references, in the present application and in the testimony provided in the Shanun Decl., at ¶¶ 18-22.

**B. The Product of Claim Independent 7 Is Materially Different From the Products Found in Baley and in Lewis**

Baley describes a method and apparatus for reconditioning and resealing a toner cartridge that (i) has only linear interfacing joining sections; (ii) has no embedded electrical conductor; and (iii) results in sections that have rough, unattractive sections that are grossly inferior to the sections that are produced by the presently claimed process.

In Baley there is no serpentine path that is traced through three dimensions as is found in the cartridges from which the claim 7 cartridge sections are made. Thus, for this reason alone, the claimed product is materially different from the product in Baley.

Furthermore, the Baley method is limited to placing the cartridge on a table and then, with one or two circular saws, cutting through only two sides only of a toner cartridge. The toner cartridge shown in Baley is an old cartridge, and is not even welded together at the two ends. Sealing at the two ends is provided by seals 77. See, Baley at column 4, lines 23-32, and Figure 2.

Additionally, in Baley no electrical conductor or printed circuit board is shown passing through or very near the joining interfaces of the Baley cartridge. As explained in the Shanun Decl., at ¶¶ 18-19 the Baley process is directed to cutting toner cartridges that have linear joining surfaces; not cartridges that have joining surfaces extending in three dimensions, to which the presently claimed method are directed.

Responding to the question raised in the Office Action, the claim 7 product is substantially and materially different from the product that results from the Lewis process. Referring to Baley and to the Shanun Decl., at ¶¶ 19, 21-22, Lewis cuts the cartridges with saws, and this necessarily leaves cuts that are very rough in comparison to the cuts made by a laser, as required in the present claims. The rougher, saw cuts resulting from the Baley process are necessarily less attractive than the laser cuts, and therefore the resulting cartridge sections and resulting remanufactured product are less appealing than those made with laser cuts. These more precise cuts thus provide cartridge sections that are substantially different because they can be made into remanufactured products that have the look and feel of a new cartridge, and meet OEM specifications, i.e., achieve alignment and orientation necessary for proper operation.

**C. Claim Limitations Not Found in the Baley Toner Cartridge Sections**

Claim 7 is independent and is directed to a disassembled toner cartridge that has characteristics or features that result from the precise method described in the application, and set forth in method claim 6, discussed above. In this regard there are several elements and limitations in presently amended claim 7 that are not found, expressly or by implication in either of the cited references. Thus, the toner cartridge sections that result from the Baley saw cutting process do not have:

Disassembled cartridge with thermoplastic joining surfaces adapted to achieve alignment and orientation necessary for proper operation

Electrical conductors required for proper function of the original toner cartridge and that are positioned adjacent the interface between joining surfaces of the toner cartridge remaining undamaged in the disassembled toner cartridge.

Thus, even if Araki's laser was used to cut Baley's cartridge, the resulting product would not be the product presently claimed. The presently claimed disassembled cartridge has electrical conductors embedded near the joining surfaces; the Baley disassembled cartridge does not. This difference is certainly a material difference because without these conductors it is not possible that the reassembled cartridge could operate properly.

For all of the above reasons it is requested that the rejection to claims 7-11 and 14 be withdrawn.

#### **VIII. AUTHORIZATION TO CHARGE FEES**

If any fees are due in regard to the present reply, authorization is hereby granted to charge Deposit Account 50-3725.

#### **IX. CONCLUSION**


For all of the above reasons it is requested that the rejections be withdrawn and that a Notice of Allowance of all pending claims be forthcoming.

Respectfully submitted,

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